

**WHAT IS CLAIMED IS:**

1. A light guiding apparatus for an illumination system, comprising:  
a first ellipsoidal reflector, being a partial ellipsoid casing; and  
5 a light tunnel;  
wherein light emitted from the light tunnel is reflected and focused on a  
DMD chip by the first ellipsoidal reflector, the light tunnel and a long axis of the  
first ellipsoidal reflector form an first angle, and the first angle and an  
eccentricity of the first ellipsoidal reflector modify the light emitted from the light  
10 tunnel to fit an incident angle and an effective dimension of the DMD chip.

2. The light guiding apparatus for an illumination system of claim 1,  
wherein the light guiding apparatus further comprises a light path turning device,  
the light path turning device is configured in a light path between the first  
15 ellipsoidal reflector and the DMD chip to turn an image generated by the DMD  
chip.

3. The light guiding apparatus for an illumination system of claim 2,  
wherein the light path turning device comprises a total internal reflection prism.

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4. The light guiding apparatus for an illumination system of claim 1,  
wherein the light guiding apparatus further comprises an optical compensation  
device, and the optical compensation device is configured in a light path  
between the first ellipsoidal reflector and the DMD chip to compensate for an  
25 aberration generated by the first ellipsoidal reflector.

5. The light guiding apparatus for an illumination system of claim 4, wherein the optical compensation device comprises a wedge prism.

5 6. The light guiding apparatus for an illumination system of claim 4, wherein the optical compensation device comprises a compensation lens.

7. The light guiding apparatus for an illumination system of claim 4, wherein the optical compensation device is a second ellipsoidal reflector, the  
10 second ellipsoidal is a partial ellipsoid casing, a second focus of the second ellipsoidal reflector overlays a first focus of the first ellipsoidal reflector, the long axis of the first ellipsoidal reflector and a main light path of the light form a second angle at the second focus, the long axis of the first ellipsoidal reflector and a long axis of the second ellipsoidal reflector form a third angle, and the first  
15 angle, the second angle, the third angle, the eccentricity of the first ellipsoidal reflector and an eccentricity of the second ellipsoidal reflector modify the light emitted from the light tunnel to fit the incident angle and the effective dimension of the DMD chip.

20 8. The light guiding apparatus for an illumination system of claim 7, wherein the third angle is equal to a sum of the first angle and the second angle.

9. A light guiding apparatus for an illumination system, comprising:  
25 a first ellipsoidal reflector, being a partial ellipsoid casing;

a light tunnel; and

a second ellipsoidal reflector, being a partial ellipsoid casing;

wherein a second focus of the second ellipsoidal reflector overlays a first focus of the first ellipsoidal reflector, wherein light emitted from the light tunnel is reflected sequentially by the first ellipsoidal reflector and the second ellipsoidal reflector and is focused on a DMD chip, and the light tunnel and a long axis of the first ellipsoidal reflector form an first angle, the long axis of the first ellipsoidal reflector and a main light path of the light form a second angle at the second focus, the long axis of the first ellipsoidal reflector and a long axis of the second ellipsoidal reflector form a third angle, and the first angle, the second angle, the third angle, an eccentricity of the first ellipsoidal reflector and an eccentricity of the second ellipsoidal reflector modify the light emitted from the light tunnel to fit an incident angle and an effective dimension of the DMD chip.

10. The light guiding apparatus for an illumination system of claim 9, wherein the light guiding apparatus further comprises a light path turning device, and the light path turning device is configured in a light path between the first ellipsoidal reflector and the DMD chip to turn a image generated from the DMD chip.

11. The light guiding apparatus for an illumination system of claim 10, wherein the light path turning device comprises a total internal reflection prism.

12. The light guiding apparatus for an illumination system of claim 10, wherein the third angle is equal to a sum of the first angle and the second angle.